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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/855,456	05/15/2001	Ting Dean Cheng	CHA920010004US1	9230

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EXAMINER	
PERILLA, JASON M	

ART UNIT	PAPER NUMBER
2634	4

DATE MAILED: 08/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/855,456	CHENG, TING DEAN	
	Examiner	Art Unit	
	Jason M Perilla	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 May 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3-5/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-24 are pending in the instant application.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on May 15, 2001 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

3. The formal drawings submitted June 22, 2001 are accepted by the examiner.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 6 and 7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claims 6, 7 and, the specification does not enable one skilled in the art to make and/or use a security system by changing the frequency of the clock used for encoding the data. While the specification discloses changing the transmission clock (transmission carrier frequency) to generate a security system, it does not disclose changing the encoding clock to create a security system. The claim is written such that

"a predetermined clock frequency" defined in claim 1 as the encoding clock is varied to create a security system although the specification discloses changing the transmission clock or carrier.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 1, 2, 5, 10, 12-17, 19, 20, 21, and 23 are rejected under 35 U.S.C. 102(a) as being anticipated by Takechi et al (Patent Application Publication of Japan 2000-174685; hereafter "Takechi").

Regarding claim 1, Takechi discloses a communication system for facilitating remote communications (abstract; solution), comprising a first device (fig. 2) having: a first global positioning system (GPS) receiver (fig, 2, ref. 34; fig. 3, ref. 100) for receiving a carrier signal (para. 0001); wherein the clock signal of the device is derived directly from the carrier signal (para. 0029); and a data transmitter (fig. 2, refs. 32, 33) for transmitting data (para. 0008). Takechi discloses a communications system wherein both a receiver (fig. 1) and a transmitter (fig. 2) of the communications system are synchronized to a carrier of a global positioning satellite (GPS) signal (fig. 1, ref. 17; fig. 2, ref. 34; para. 0014). Thereby, the transmitter and the receiver may both be in very close synchronization due to the very small tolerance of the carrier signal of the GPS signal (para. 0014). Takechi further discloses that the data is PN encoded according to

the clock signal generated by the clock signal synchronization and generator circuit (para. 0021; fig. 2, ref. 36) in the PSK modulation system (para. 0028). The disclosure of Takechi clearly relates to the synchronization of the carrier signal of a communications system to that of a GPS signal carrier. Additionally, it is inherent in the art that in a frequency shift keying system (i.e. PSK) that the data to be transmitted must be bit synchronized (encoded, decoded, modulated, demodulated) in close relation to the carrier of the signal for utility of the communications system. Therefore, it is inherent that transmission carrier of the communications system disclosed by Takechi as well as the encoding clock are both directly synchronized to the GPS carrier. Indeed, the standard frequency generator of the transmitter (fig. 2, ref. 34) is used both by the PN encoder (fig. 2, ref. 36) as well as the frequency converter or modulator (fig. 2, ref. 32).

Regarding claim 2, Takechi discloses the limitations of claim 1 as applied above. Further, Takechi discloses a second device (fig. 1) having: a second GPS receiver (fig, 1, ref. 17) for receiving the carrier signal; a data receiver (fig. 1, refs. 10 and 11) for receiving the encoded data from the transmitter; and a signal decoder (fig. 1, ref. 14; para. 0009; "sorting means to sort out") system for decoding the encoded data using a second clock signal at the predetermined clock frequency (para. 0009, "using said carrier signal"), wherein the second clock signal is derived directly from the carrier signal received from the second GPS receiver (fig. 1, ref. 17; para. 0009 and 0015). The standard frequency generator of the receiver (fig. 1, ref. 17) is used both by the PN

decoder (fig. 1, ref. 22) as well as the frequency converter or demodulator (fig. 1, ref. 11).

Regarding claim 5, Takechi discloses the limitations of claim 1 as applied above. Further, Takechi discloses that the encoder system derives the first clock signal by modulating the carrier signal to an intermediate signal (fig. 3, refs. 43 and 45; para. 0029).

Regarding claim 10, Takechi discloses the limitations of claim 10 regarding a communications device for receiving as applied to claim 2 above. Further, Takechi discloses that the signal which should be transmitted is apart from that of the GPS data (para. 0008 and 0021, "the data to be transmitted"). The communications system of Takechi does not utilize any data from the GPS satellite signal. Rather, it makes use of the precise carrier signal.

Regarding claim 12, Takechi discloses the limitations of claim 10 as applied above. Further, Takechi discloses that the encoded data comprises wireless data (fig. 1, ref. 10).

Regarding claim 13, Takechi discloses the limitations of claim 10 as applied above. Further, Takechi discloses a transmitter (fig. 2) that includes a system for encoding data (fig. 2, ref. 36) using an encoder clock signal derived from the carrier signal (fig. 2, ref. 34).

Regarding claim 14, Takechi discloses a method for synchronizing signals in a communication system (para. 0001 and 0002), comprising the steps of: receiving a global positioning system (GPS) carrier signal (fig. 3); generating a clock signal derived

from the carrier signal (fig. 1, ref. 17 – receiver or fig. 2, ref. 34 – transmitter); and PN encoding/decoding or synchronizing (para. 0021 – encoding or 0027 - decoding) a non-GPS data stream with the clock signal. Takechi discloses in paragraph 8 that the communications system has "a carrier signal generation means to generate a carrier (fig. 2, ref. 34) ... based on the signal received from the satellite". Takechi discloses that the data is PN encoded/decoded according to the clock signal generated by the clock signal synchronization and generator circuit (fig. 1, ref. 17; fig. 2, ref. 36) in the PSK modulation system (para. 0028). The disclosure of Takechi clearly relates to the synchronization of the carrier signal of a communications system to that of a GPS signal carrier. Additionally, it is inherent in the art that in a frequency shift keying system (i.e. PSK) that the data to be transmitted must be bit synchronized (encoded, decoded, modulated, demodulated) in close relation to the carrier of the signal for utility of the communications system. Therefore, it is inherent that carrier of the communications system disclosed by Takechi as well as the encoding/decoding clocks are both directly synchronized to the GPS carrier.

Regarding claim 15, the clock signal is necessarily generated at a predetermined frequency because the GPS carrier signal has a predetermined frequency.

Regarding claim 16, Takechi discloses the limitations of claim 14 as applied above. Further, Takechi discloses the further step of transmitting the non-GPS data stream at the frequency of the clock signal (fig. 2, refs. 34, 37, and 32).

Regarding claim 17, Takechi discloses the limitations of claim 14 as applied above. Further, in the case that the embodiment of claim 14 is a receiver (fig. 1),

Takechi discloses that the non-GPS data stream was received from a remote transmitter (fig. 2) also operating at the frequency of the clock signal.

Regarding claim 19, Takechi discloses a method of synchronizing a pair of communication devices, comprising the steps of: receiving a global positioning system (GPS) carrier (fig. 2, ref. 34) signal at a first device (fig. 2); at the first device, deriving from the carrier signal a transmitter clock signal having a predetermined frequency (para. 0008); transmitting data at the predetermined frequency from the first device (para. 0008; fig. 2, ref. 33); receiving the data at a second device (fig. 1, ref. 10); receiving the GPS carrier signal at the second device (fig. 2, ref. 17); and at the second device, deriving from the carrier signal a receiver clock signal having the predetermined frequency (para. 0009, 0021 and 0022).

Regarding claim 20, Takechi discloses the limitations of claim 19 as applied above. Further, Takechi discloses the further step of synchronizing the received data using the receiver clock signal. The disclosure of Takechi clearly relates to the synchronization of the carrier signal and internal encoding clock signal of a communications system to that of a GPS signal carrier. In the receiver embodiment of figure 1, it is inherent that the received data is synchronized to the receiver clock signal for the received data to be interpreted.

Regarding claim 21, Takechi discloses the limitations of claim 19 as applied above. Further, Takechi discloses that the transmitter clock signal and the receiver clock signal are derived from the carrier signal using a common formula. Figures 3 and 4 of Takechi disclose the standard frequency signal generator (para. 0029) which

outputs the standard frequency signal according to the GPS carrier signal in both the transmitter (fig. 2, ref. 34) and receiver (fig. 1, ref. 17). Hence, the transmitter clock signal and the receiver clock signal are derived from the carrier signal using a "common formula".

Regarding claim 23, Takechi discloses the limitations of claim 19 as applied above. Further, Takechi discloses that the data is transmitted via a wireless communication channel (fig. 1, ref. 10; fig. 2, ref. 33).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 3, 4, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takechi in view of Murphy (US 6009335).

Regarding claims 3 and 4, Takechi discloses the limitations of claim 1 as applied above. Takechi discloses a communications system wherein a transmitter and a receiver are synchronized by the same GPS carrier system. Takechi does not explicitly disclose that the GPS carrier signal is one of a L1 or L2 signal. However, Murphy teaches the accuracy of the carrier signals of the L1 and L2 signals used by the GPS satellites (col. 1, lines 23-35). The accuracy of the L1 and L2 carrier signals cause them to be exemplary carrier signals for synchronization. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made

to synchronize the communications system of Takechi to one of the L1 or L2 carrier signals of the GPS satellite as taught by Murphy because they are the two carrier signals transmitted by the GPS satellite having exemplary accuracy.

Regarding claim 11, Takechi discloses the limitations of claim 10 as applied above. Further, Takechi in view of Murphy disclose the additional limitations of claim 11 as applied to claims 3 and 4 above.

10. Claims 6-9, 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takechi in view of Gibson (Gibson, Jerry D; "The Communications Handbook").

Regarding claim 6, Takechi discloses the limitations of claim 1 as applied above. Takechi does not disclose that the signal encoder system includes a first security system for changing the predetermined clock frequency to a predetermined sequence of frequencies. However, Gibson teaches a frequency hopping spread spectrum system (pgs. 202, 203) wherein a clock or carrier frequency of both the transmitter and receiver are varied (pg. 202, line 15; "pseudorandom frequency shifts") to create a secure transmission (pg. 199; section 16.1). The frequency shifts are called pseudorandom because they are difficult to track and hence secure being predetermined only by the communications system. The use of frequency hopping spread spectrum is well known in the art for the creation of a secure transmission system. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize frequency hopping spread spectrum as taught by Gibson in the

communications system of Takechi because it would create a secure transmission system by varying the frequency of the communications carrier frequency.

Regarding claim 7, Takechi in view of Gibson discloses the limitations of claim 6 as applied above. Further, Gibson teaches a frequency hopping spread spectrum system (pgs. 202, 203) wherein a clock or carrier frequency of both the transmitter and receiver are varied (pg. 202, line 15; "pseudorandom frequency shifts") to create a secure transmission (pg. 199; section 16.1). The frequency shifts are called pseudorandom because they are difficult to track and hence secure being predetermined only by the communications system. The use of frequency hopping spread spectrum is well known in the art for the creation of a secure transmission system. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize frequency hopping spread spectrum as taught by Gibson in the communications system of Takechi because it would create a secure transmission system by varying the frequency of the communications carrier frequency.

Regarding claims 8 and 9, Takechi discloses the limitations of claim 2 as applied above. Takechi does not explicitly disclose the communications system operating in a synchronous or asynchronous manner. However, the use of synchronous and asynchronous methods of communication are well known in the art as disclosed by Gibson (pg. 612, lines 31-40). Although the teachings of Gibson are applied in reference to a local area network, they are unequivocally applicable to any communications system. The techniques of synchronous and asynchronous

communications are well known in the art and do not provide a novel limitation to the claim.

Regarding claim 18, Takechi discloses the limitations of claim 14 as applied above. Takechi does not disclose the method further comprising the step of periodically changing the frequency of the clock signal. However, Gibson teaches a frequency hopping spread spectrum system (pgs. 202, 203) wherein a clock or carrier frequency of both the transmitter and receiver are periodically varied (pg. 202, line 15; "pseudorandom frequency shifts") to create a secure transmission (pg. 199; section 16.1). The frequency shifts are called pseudorandom because they are difficult to track and hence secure being predetermined only by the communications system. The use of frequency hopping spread spectrum is well known in the art for the creation of a secure transmission system. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to periodically change the frequency of the clock signal to create a frequency hopping spread spectrum system as taught by Gibson in the communications system of Takechi because it would create a secure transmission system by varying the frequency of the communications carrier frequency.

Regarding claim 22, Takechi discloses the limitations of claim 19 as applied above. Takechi does not disclose the method further comprising the step of systematically altering the frequency of the transmitter clock signal and the receiver clock signal using a predefined scheme. However, Gibson teaches a frequency hopping spread spectrum system (pgs. 202, 203) wherein a clock or carrier frequency of

both the transmitter and receiver are systematically altered (pg. 202, line 15; "pseudorandom frequency shifts") to create a secure transmission (pg. 199; section 16.1). The frequency shifts are called pseudorandom because they are difficult to track and hence secure being predetermined only by the communications system. The use of frequency hopping spread spectrum is well known in the art for the creation of a secure transmission system. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to systematically alter the frequency of the receiver and transmitter clock signals to create a frequency hopping spread spectrum system as taught by Gibson in the communications system of Takechi because it would create a secure transmission system by varying the frequency of the communications carrier frequency.

11. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takechi in view of Russo (US 6167078).

Regarding claim 24, Takechi discloses a communication device for processing data (fig. 1, ref. 14), comprising: a global positioning system (GPS) receiver (fig. 1, ref. 17) for receiving a carrier signal; a signal processing system for converting the carrier signal to a clock signal at a predetermined frequency (para. 0010). Takechi does not disclose a universal asynchronous receiver/transmitter (UART), wherein the UART utilizes the clock signal obtained from the signal processing system to process data. However, Rosso teaches the use of a transmit and receive UART (fig. 4, refs. "Tx UART", 44) which utilizes a PLL clock signal (col. 1, lines 19-20). One skilled in the art is familiar with the advantages of using standard UART devices in asynchronous

communication. Asynchronous communication is well known as applied to claim 9 above, and universal asynchronous transmit and receive units as taught by Rosso are commonly utilized in communications systems. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize a UART in the communication device of Takechi as taught by Rosso because it is commonly utilized in the art to implement asynchronous communications among a system which is synchronized according to a predetermined clock frequency.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following prior art not relied upon above is cited to further show the state of the art with respect to GPS carrier signal synchronized systems.

U.S. Pat. No. 5727034 to Ojaniemi.

U.S. Pat. No. 5416808 to Witsaman et al.

U.S. Pat. No. 5604768 to Fulton.

U.S. Pat. No. 5377232 to Davidov et al.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M Perilla whose telephone number is (703) 305-0374. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Chin can be reached on (703) 305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jason M. Perilla
July 25, 2004

jmp

CHIEH M. FAN
PRIMARY EXAMINER